USDA Service Center Initiative
Geospatial Data Acquisition, Integration and Delivery
Business Re-engineering Project

Data Themes - Outline - Common Land Unit

I. Acquisition

A. Data Source

1. Producer Information

a. Name

Digitizing the field and tract boundaries via heads-up digitizing methods, from the photomaps that each USDA Field Service Center has produces the Common Land Unit. Each of the Common Land Unit (CLU) that have been digitized have been either digitized at the producer's location or contracted out. Future sources will come from digitizing centers located throughout the United States.

b. Location of Headquarters

USDA Farm Service Agency
Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, UT 84119

c. Internet Address

http://apfo.usda.gov

2. Publisher Information

a. Name

The Common Land Unit layers are available from the APFO in Salt Lake City.

b. Location of Headquarters

USDA Farm Service Agency
Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, UT 84119

c. Internet Address

http://apfo.usda.gov

3. Acquisition Information

a. Delivery Media

CLU are available on CD-ROM, 4mm Tape using Windows N/T 4.0 Backup utility, and if requested, off of a FTP site located at the Aerial Photography Field Office.

b. Download URL

(FTP)
apfo.usda.gov
anonymous login
email account for password
/pub/clu/<state fips code (2 digit)>/<county fips code (3 digit)>

c. Projected Data Availability Schedule

The CLU that have been digitized, checked for errors have been delivered to the USDA SCIT
5601 Sunnyside Avenue
Beltsville, MD 20705-5701
These data, too, are located at the "Download Site (FTP)

B. Standards Information

1. Geospatial Data Standard

a. Standard Name and Steward Information

According the directory structure as set forth by the AID (Acquisition, Implementation, and Delivery) Team on November 02, 1998, the directory structure will contain the following information regarding the CLU and it's naming convention.

*<Drive>:\Service Center Themes\IOP # City\FIPS County\Common Land Unit**fields***
Where IOP # is the IOP Number and
Where FIPS is the State and County FIPS Code for the county being mapped.

b. Standard Version

The final version that is released from the APFO in Salt Lake City, Utah is referenced to as the "final version". No version numbering has been established since the CLU data layer is under constant revision. Versions that are released with no edits are referred to as "preliminary versions". These version releases will have little if no edits made to them. They will, however, have the attributes in the proper order to allow the USDA Field Service Center to view.

c. Standard URL

None

2. Metadata Standard

a. Standard Name and Steward Information

Content Standards for Common Land Unit Metadata version nnnn

The metadata Contact is:

USDA Farm Service Agency
Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, UT 84119-2020 USA

b. Description of Metadata Captured

The metadata captured includes the geographic extent of the CLU, the number of polygons, number of fields, number of tracts and the number of total tract acres as was digitized, and edited. This number (total tract acres) will change on a weekly basis due to the constant changes that will be done in the USDA Field Service Center. The metadata will also contain information regarding the base material/imagery used to capture the data. It will contain information about the photomaps (source documents), the date of their photography and the location that did the digitizing and editing.

c. Metadata Accuracy and Completeness Assessment

The metadata will be accurate as the source documents. Each county will have the information listed in 2.b captured via custom programming at the APFO to ensure stability and accuracy.

C. Acquired Data Structure

1. Geospatial Data Format

a. Format (raster, vector, etc.)

The CLU will be in a polygon vector format.

b. Format Name

This data will be release in ESRI ArcView 3.*x* Shape files, which will have the following files attached for each county:

fields.shp
fields.shx
fields.dbf

c. Data Extent

Individual County with a one mile overedge for CLU administrated outside the established county boundary.

d. Horizontal and Vertical Resolution

The CLU has a standard of being within 3 meters of the visible physical feature on the digital base map in the easting or X direction.

e. Absolute Horizontal and Vertical Accuracy

The CLU have a standard of being within 3 meters of the visible physical feature on the digital base map in the northing (Y) and easting (X) directions.

f. Nominal Scale

The CLU will be digitized at a base (nominal) scale of no less than 1-inch equals 400 feet (1:4,800) and no more than 1 inch equals 200 feet (1:2,400). This will allow for tight digitizing specifications and accurate data capture.

g. Horizontal and Vertical Datum

Same as the base digital imagery.

h. Projection

UTM (Universal Transverse Mercator). Where a UTM zone splits the county, the CLU will all reside in the predominant zone. The same as the imagery.

i. Coordinate Units

Meters

j. Average Data Set Size

Approximately 5KB for both the coordinates and attributes, but this varies based on extent of county and density of fields.

k. Symbology

A solid line will notate linework. Selection colors can be altered by the operator to accommodate any handicap the operator may have.

2. Attribute Data Format

a. Format Name

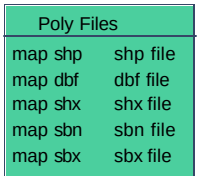
Dbase V, as part of an ESRI Shape file.

b. Database Size

Varies by size of county. Approximately 4KB

3. Data Model

a. Geospatial Data Structure



b. Attribute Data Structure

Dbase files as associated with shape files

c. Database Table Definition

The following attribute format will be with every and all CLU.

Size	Type	Attribute Name	Description Of Attribute
2	C	statefips	State (2 digit) FIPS Code
3	C	countyfips	County (3 digit) FIPS Code
7	I	clunumber	This is the "field" number. A number on the photomap (source document) that is in black, and circled.

7	I	tract	This is the "tract" number. Usually in red within the tract's boundary(ies)
7	I	farm	The farm number.
1	C	hel	Highly Erodible Land Status. Attribute is either blank, Y, or N for no action, is HEL, or is not HEL.
8	N	calcacres	This is the acreage amount calculated per polygon.
19	C	uniqueid	A nationally unique number generated during the digitizing and updating process.

key: C=string/character **I**=Integer **N**=Numeric

d. Data Relationship Definition

The CLU will be able to be searched by using the farm, tract and/or clunumber.

e. Data Dictionary

See above.

D. Policies

1. Restrictions

a. Use Constraints

The CLU will be visible to all that want to see it as it exists in the USDA Field Service Centers. These data are Public Domain.

b. Access Constraints

Only USDA Field Service Center personnel will have the ability to make the changes as needed to avoid corruption of the dataset.

c. Certification Issues

Certification will be on an "as needed basis". That is, the CLU will be digitized according to the current need of the cooperator(s) and as outlined on the photomaps (source documentation).

2. Maintenance

a. Temporal Information

None

b. Average Update Cycle

Daily. CLU are always changing.

E. Acquisition Cost

1. Cooperative Agreement

a. Description of Agreement

Farm Service Agency requests digitizing of Common Land Unit for county or block of counties.

b. Status of Agreement

2. Cost to Acquire Data

CLU costs involve labor, building maintenance costs, shipping of the photomaps (source documents). On average $250.00 per county for shipping one way. Digitizing 80 hours. Editing 40 hours.

II. Integration

A. Value Added Process

1. Benefit to the Service Center

The CLU can be accessed on a common computer (MS Windows N/T operating system) using custom software designed for the purpose of looking up CLU information. This information can be printed out for the cooperator(s), updated as needed both in the office and in the field, and will not need to be re-digitized into the computer system after it is initially entered in. This will save on the current labor-intensive method of transferring field, tract and non-agricultural landlines to newer imagery. Acreage can be calculated with a very high degree of accuracy in an instant with out having to take an average the field acreage as is currently being done.

2. Process Model

a. Flow Diagram

b. Process Description

- **Photomaps Available.** If the Photomaps (source documents) are available, the county is ready for digitizing.
- **Digitize CLU.** Digitizing to be performed by digitizing centers and/or contractor.
- **Delivery (CLU, Mosaic, photomaps).** Delivery of these data to the APFO for edits.
- **APFO Inspection.** The APFO in Salt Lake City, UT will inspect the CLU for attribute and digitizing errors.
- **Acceptance? (Y/N)** If errors fall below a 5 percent total, the APFO will make the corrections in-house. If greater than 5 percent, the CLU will be shipped back to the place the CLU were digitized (contractor or digitizing center)
- **To USDA Field Service Center.** After inspection, the CLU will be shipped to the USDA Field Service Center's on a CD-ROM or other media that can be used on their equipment.

3. Technical Issues

None. Farm Service Agency personnel using custom written programs on a Geographic Information System will maintain the CLU in the USDA Field Service Centers.

a. Tiling

None

b. Compression

None

c. Scale

1:4800

A proper viewing scale can range from 1"=200 feet (1:2,400) to a full county view depending on the size and extent of the county. All CLU data will be accurate within 3 meters of the physically detectable features on the digital base imagery. (i.e. Fence line, ditch, property boundary, roadside, etc...)

d. Tonal Matching

None

e. Edge-matching

None-county map.

Most USDA Field Service Center's assist cooperators in adjoining counties. These cooperators, for the most part, have CLU that exists within a 1-mile buffer of the USDA Field Service Center. Therefore, the CLU will take into account a one-mile buffer to include all fields that area administered by the Service Center

4. Quality Control

a. Procedures

All CLU are inspected by taking a 10 percent random sample of the total number of fields. The CLU are then checked for attribute errors, digitizing errors, and topologically correct (no open gaps where there should be none) data. If the errors exceed 5 percent of the 10 percent selected, the CLU are returned to the digitizing center or contractor; whoever did the original work.

b. Acceptance Criteria

As stated above, if the errors exceed 5 percent of the 10 percent selected, the CLU are returned to the digitizing center or contractor; whoever did the original work.

5. Data Steward

a. Name and Organization

USDA Farm Service Agency
Aerial Photography Field Office
2222 West 2300 South
Salt Lake City, UT 84119-2020 USA

b. Responsibilities

The CLU that are digitized, and then edited will be stored at the APFO in Salt Lake City, Utah. Updates will not be released due to the rapid changes that occur on the CLU once installed on the USDA Field Service Center's GIS system.

B. Integrated Data Structure

1. Geospatial Data Format

a. Format (raster, vector, etc.)

Polygon vector format.

b. Format Name

ESRI ArcView Shape file.

c. Data Extent

Individual County with a one mile overedge for CLU administrated outside the established county boundary.

d. Horizontal and Vertical Resolution

The CLU has a standard of being within 3 meters of the visible physical feature on the digital base map in the easting or X direction.

e. Absolute Horizontal and Vertical Accuracy

The CLU have a standard of being within 3 meters of the visible physical feature on the digital base map in the northing (Y) and easting (X) directions.

f. Nominal Scale

The CLU will be digitized at a base (nominal) scale of no less than 1-inch equals 400 feet (1:4,800) and no more than 1 inch equals 200 feet (1:2,400). This will allow for tight digitizing specifications and accurate data capture.

g. Horizontal and Vertical Datum

Same as the base digital imagery.

h. Projection

UTM (Universal Transverse Mercator). Where a UTM zone splits the county, the CLU will all reside in the predominant zone. The same as the imagery.

i. Coordinate Units

Meters

j. Symbology

A solid line will notate linework. Selection colors can be altered by the operator to accommodate any handicap the operator may have.

2. Attribute Data Format
   a. Format Name

      All attributes will be stored in DBase III or IV format. This file is the ***fields.dbf***. Attributes will be placed in the center of the polygon feature being digitized.

   b. Database Size

      Varies by extent of county and density of fields.

3. Data Model
   a. Geospatial Data Structure

      The CLU will be digitized and stored in ESRI's ArcView 3.*x* format in shape files. The files can be imported into most GIS systems on the current market, and the attribute table (.dbf file) can be imported into most spreadsheet and relational database software on the market today.

   b. Attribute Data Structure

      Same as in previous "Acquired Data" section.

   c. Database Table Definition

      Same as in previous "Acquired Data" section.

   d. Data Relationship Definition

      Same as in previous "Acquired Data" section.

   e. Data Dictionary

      Same as in previous "Acquired Data" section.

C. Resource Requirements

1. Hardware and Software

2. Staffing

D. Integration Cost

1. Hardware and Software

2. Staffing

III. Delivery

A. Specifications

1. Directory Structure
   a. Folder Theme Data is Stored In

(Version 5)

\Service Center Themes
\nnn City Name
\nnnnn County Name
\Common Land Unit

Where: nnn = Service Center IOP Number
Where: nnnn = State and County FIPS Code
Where: City Name is the City Where the Service Center Resides
Where: County Name is the County where the Service Center Resides

2. File Naming Convention
   a. List of Theme Files and The File Naming Convention

\FIELDS.SHP
\FIELDS.SHX
\FIELDS.DBF

B. User Information

1. Accuracy Assessment
   a. Alignment with Other Theme Geospatial Data

These data that represent the Common Land Unit area captured at various scales. The largest scale is 1 inch equals 200 feet on the ground (1:2,400) out to a smaller scale not to exceed 1-inch equals 660 feet or 1:7,920.

   b. Content

Each field and tract that is captured represents the best representation of the features as they are drawn on the original photomaps.

2. Appropriate Uses of the Geospatial Data
   a. Display Scale

The original data source scale or smaller, usually 1:7,920

   b. Plot Scale

The original data source scale or smaller, usually 1:7,920

   c. Area Calculations

As accurate as the source data and capture scale and the algorithm used in the ArcView/ArcInfo software.

   d. Decision Making

None.

C. Maintenance and Updating

1. Recommendations and Guidelines
   a. Frequency of Updates

The Common Land Unit will be updated by the Service Center personnel as needed as tract and field boundaries are changed to meet the farmer/rancher's needs.

b. Location for the Theme Data to be Maintained

In the USDA Field Service Centers. All information is very non-static, and changes on a daily basis.

c. Maintenance and Updating Procedures Overview

Common Land Units are updated daily. It is recommended that there be a server script or program that keeps a clean weekly backup of the CLU on hand in the event the CLU layer becomes corrupt.